ON THE 'HOW MANY EUROPES' DEBATE: VARIETIES OF SERVICE ECONOMIES[1]

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ABSTRACT

This paper shapes and identifies the varieties and dynamics of service economies in Europe25. By adopting a Neo-Schumpeterian and evolutionary approach it contributes to enrich previous research dealing with national disparities from the perspective of services economic structures. Communalities across countries and time are detected and discussed at different levels of analysis. A wide set of models across the European region is found from an aggregated perspective. Moreover, the paper analyses the key dimensions explaining the different service models at sectoral level: structural change, knowledge and innovation, internationalisation and competition restrictions. The main result shows that structural composition of countries plays a prominent role, while heterogeneity is driven by dissimilarities in knowledge bases and innovative efforts across Europe.

Keywords: models of national service economies, Europe, cluster analysis, innovation.

INTRODUCTION

The European project is a complex one embracing major disparities at institutional, cultural, social and economic levels. The persistence of the uneven regional development across the continent has transformed the goal of a single Europe into a multiple Europe where core-peripheral-external differences across countries have, to some extent, institutionalised (Agnew 2000). As Daniels *et al.* (2011, p. 149) claim

[1] The final version of this paper is published in Tijdschrift voor Economische en Sociale Geografie – 2015, DOI:10.1111/tesg.12119, Vol. 106, No. 3, pp. 307–320.

'Europe is still an economy of economies'. Europe's complexity has been studied from different perspectives. The 'varieties of capitalism' recognises diverse institutional models of political economy (Hall & Soskice 2001). Other approaches identify 'varieties of social policy models' based on the national configuration of the welfare state system. This is the case of the path-breaking study by Esping-Andersen (1990) and of the more recent related studies (Sapir 2006). Castells and Aoyama (1994) and Aoyama and Castells (2002) acknowledge the diversity of models across advanced nations on the basis of the sectoral composition of employment and occupational structure. Following development patterns of the structural change in economies, analysed in the pioneer works by Clark, Kaldor and Kuznets, advanced countries have faced a sectoral shift towards services. Services embrace a heterogeneous set of economic activities that share certain specificities: intangibility, interactivity and information intensity, namely the 'three Is' defined by Miles (1999).[1] The service economy goes beyond sectoral boundaries due to the increasing interactions of services with others sectors and the role that service functions play in the economy, in companies or public institutions. At present, tertiary activities account for more than 70 per cent of European value added and employment. Even within manufacturing industries they represent a major part of jobs. However, the unbalanced path followed by service activities across the advanced regions has inspired some works that attempt to identify their diverse configuration, namely Gadrey (2007, 2009) and Daniels et al. (2011). Gadrey recognises a typology of the service 'worlds' across Western developed economies (2007) with a particular focus on the OECD countries (2009). Within this framework, Daniels *et al*. (2011) restrict the analysis to the European region, analysing how its enlargement to include new member states of the East may have transformed the varieties of service economy models. This paper is, to some extent, a reaction to these analyses and therefore contributes to the debate of the identification of the different formations of capitalism from the perspective of services economic structures of the EU25 countries.

The paper is rooted in Neo-Schumpeterian Economics and adopts an evolutionary perspective since this approach allows the understanding of the dynamic process going on in capitalist economies (Hanusch and Pyka, 2007). Accordingly, our major aim is to examine the diverse models of service economies existing across Europe with a focus on the structural composition of countries. From this follows that a spatially disaggregated analysis of services activities within regions lies beyond the scope of our argument. Neo-Schumpeterian Economics considers knowledge and innovation as a major driving force of the developments taking place in complex systems. Moreover, as Daniels et al. (2011, p. 149-150) argue, advanced services (in particular, business

services) ‘are the source of a clear structural difference between the service economies of the EU10 and the EU15’. In line with this, it is the knowledge-based service economy we are interested in rather than the spatial/regional distribution of service activities. Therefore, we also analyse knowledge bases and innovative efforts across European economies with a particular attention to detect the changing composition of service economies models.

In this context, the value added of our paper regarding the previous literature on the topic (Gadrey 2007 and 2009; Daniels *et al.* 2011) could be summarized in this way: i) we adopt an evolutionary and systemic perspective for analysing service economies varieties in Europe and their dynamics during the decade 1995-2005; ii) we consider different dimensions of the service economies in order to identify which ones explain the similarities and dissimilarities across countries and time; iii) we provide new evidence at different levels of analysis. At the aggregated level, we study three major categories of services (public, private and mixed services). From a disaggregated perspective, we analyse a comprehensive set of indicators at sectoral level (not at spatial/regional level), to deal, as much as available data allows, with the heterogeneity of the service economy.[2] The validity of the results will obviously be restricted to the approach followed, the spatial units considered and the data used in the different level of analysis.

Our research is organized as follows. First, a literature review of the varieties of institutional, social and economic models existing across the EU is presented. After explaining the technique followed in order to detect similarities and dissimilarities in EU services economies, two complementary empirical approaches are developed. In the first place, a clustering of the EU service economy is developed on the basis of macro-aggregated indicators, such as public, private and mixed services’ participation in employment and recent growth. In a second step a multivariate data analysis is applied to a comprehensive set of indicators at the disaggregated level that reflect different dimensions of service economies, such as: structural composition; knowledge base and innovative efforts; internationalisation; and competition restrictions. By accounting for sectoral specifics, this paper attempts to provide a precise picture of the configuration and dynamics of service economies.

VARIETIES OF MODELS ACROSS EUROPE

Several conceptual approaches have been used to capture complex national disparities. Institutional models of political economy or 'varieties of capitalism' (VoC) have been identified by Hall and Soskice (2001) from the different types of relationships and coordinating mechanisms among multiple actors, such as the state, the society, firms and the market (Allen 2004). Two polar ways of institutional organization of production have been recognised: liberal market economies and coordinated market economies. The former is mainly focused on short-term individual economic gains and is coordinated by market-driven mechanisms, while the latter is centred on long-term and cooperative-type efforts, together with non-market coordinating mechanisms (Blanke & Hoffmann 2008).

Other approaches have recognised 'varieties of social policy models' on the basis of the configuration of the welfare state system. The path-breaking study by Esping-Andersen (1990) characterized them as liberal, conservative or social democratic. Nevertheless, more recent studies (Sapir 2006) have defined four social models: Nordic, Anglo-Saxon, Continental and Mediterranean.[3] They differ mainly on the level and scope of social expenditure, fiscal intervention, strength of the labour unions and the type of protection against labour market risks. The Nordic model shows the highest levels of social protection expenditure, as well as universal welfare provision and can be considered the most efficient and equitable. In contrast, the Mediterranean grouping that relies on large social spending on old-age security and strong employment protection delivers neither efficiency nor equity. The Anglo-Saxon model, driven mainly by social assistance of the last resort, can be considered efficient but not equitable, while the opposite occurs in the Continental system.

Because structural change is by far not homogeneous between advanced economies, a diversity of models has been recognised on the basis of the sectoral composition of the national economic structure. Castells and Aoyama (1994) argue that the transformation of employment and occupational structures of G-7 countries determines the diversity of the informational society. As a result of their long-term observation of empirical evidence they identify two models: the 'Service Economy Model' (represented by Anglo-Saxon countries, e.g. United States, Canada, and the United Kingdom) and the 'Info-Industrial Model' (or German/Japanese model). While in the former, advanced services (with a high informational content) grew at the expense of manufacturing, in the latter, they expanded along with the maintenance of a considerable participation of manufacturing in employment. Using updated data, they confirm that the incipient diversity of the informational society analysed in their previous research became a

mature reality (Aoyama & Castells 2002). Despite describing major general trends, the analysis performed by Castells and Aoyama (1994) and Aoyama and Castells (2002) is based only in a few countries and, thus, has difficulties in providing an international typology of the informational society (Gadrey 2007, p. 45).

Due to cross-countries disparities in the results and consequences of the shift from manufacturing to services, different types of service economy exist (Bryson & Daniels, 2007). Apart from the model prevailing in the United States, where services growth has been impressive, other models may be more relevant in order to discover 'an European path to the creation of high-quality jobs and services, one that takes greater account of social cohesion' (Gadrey 2007, p. 45). Based on three main criteria related to the quantitative and qualitative composition of employment in services, Gadrey identifies three models of the service society across Western countries: the Anglo-Saxon, the Nordic and the continental European models (2007, p. 45).[4] The sharp contrast between the Anglo-Saxon and the Nordic model is related to the different structure of the service sector with respect to the importance of trade and personal services on the one hand and social services as well as crucial differences in societal norms across countries on the other hand. Gadrey restricts his analysis to those countries where services represent at least 65 per cent of employment and, therefore, excludes Southern European countries and Ireland. In a more recent study, he applies the same criteria to a larger set of 17 OECD developed countries and recognises four service 'worlds' (Gadrey 2009): liberal (or Anglo-Saxon); Nordic; European Continental; and familialist (the inclusion of Japan within this group excludes its labelling as Mediterranean).[5] He argues that different national conventions on equality, solidarity, gender and family may underlie this diversity of worlds in developed service economies. Burger and Stare (2010) analyse gaps in private and public employment shares, relative to EU15, and stress that there are more varied service models in the enlarged Europe. In fact, Daniels *et al.* (2011, p. 157) argue that '… services dynamics and the incorporation of the new member states are transforming the European landscape in such a way that a much wider diversity of models and specialisation patterns is emerging.' Based on the analysis of major sectoral trends and of convergence dynamics, they identify the Central East European (CEE) model and align it between the polar worlds identified by Gadrey. The CEE model '(…) includes economies that are restructuring but which still include significant agricultural and manufacturing employment and output and those that are still in the process of establishing the institutions required to support the development of a fully functioning market economy' (Daniels *et al.* 2011, p. 156). They find out that the wide gap between

the CEEC model and EU15 countries relates to the dynamics of those services with a high knowledge-content. Additionally, they claim that other models 'such as those based on Southern European countries' (Daniels *et al.* 2011, p. 159) may be worth to be analysed in more detail.

Our paper follows and reacts to this literature. First, we analyse the configuration of EU25 service economies in the light of macro-economic indicators and, then, we account for sectoral specifics. Next section discusses the methodological approach adopted.

DETECTING SIMILARITIES AND DISSIMILARITIES IN EUROPEAN SERVICE ECONOMIES: CLUSTER ANALYSIS

In order to work out the similarities and dissimilarities among European service economies cluster analysis techniques are applied (e.g. Jobson 1992). This methodological approach has been extensively used within the 'welfare regime literature' in order 'to test the regime classification of countries' (Ferragina *et al.* 2012, p. 4). According to Powell and Barrientos (2001, p. 91) 'cluster analysis has proved the most effective and widely used technique to identify welfare regimes'. Although being a heuristic method, it is 'robust, meaningful and simple' (Gough 2001, p. 169). This paper will therefore cluster countries using variables capturing the configuration of the service economies. The analysis will be performed, first, on the basis of macro-aggregated indicators and, second, on a comprehensive set of variables at the disaggregated level.

The general rationale behind clustering techniques is to test a sample for the degree of structural commonalities between the units of analysis. Its outcome is a categorization of the analysed units so that the coherence of each group (or cluster), as well as the heterogeneity across different clusters, is maximized. To determine the coherence of a certain cluster and to calculate the existing diversity of different clusters, distance values between the units of analysis need to be determined on the basis of the characteristics of each entity. From the various methods to calculate distances between the entities, the squared Euclidean distance measure is applied. That is because this is a frequently applied distance measure of metric data. Furthermore, it accounts more strongly for differences between entities than does the linear Euclidean distance. Hence, the distance between two countries, *i* and *j,* can be calculated as follows:

$$d(i,j) = \sum_{k=1}^{m} (a_{ik} - a_{jk})^2$$

Here, a_{ik} represents the parameter value of characteristic *k=1,…,m* for country *i=1,…,n*. Thus, the entire quantitative data matrix is $\mathrm{A} = (a_{ik})_{m \times n}$. The determination of distances between entities needs to be completed by the application of a classification algorithm. Depending on the quality of the underlying data and on the research target, various classification procedures exist. The next section is based exclusively on macro indicators available from the EUKLEMS Database: data on relative employment shares in 2005 (for the categories of private services, public services and mixed services) and the growth rate of such shares during 1995-2005.[6] This data is characterized by a relatively large number of units of analysis (22 European countries[7]) and, at the same time, by a relatively small number of variables (six variables). Since we expect the size of the clusters to be uneven, we use the weighted pair-group average as the main linkage rule. At disaggregated level, however, data is characterized by a relatively small number of units of analysis (12 European countries with available information) and, at the same time, by a relatively large number of variables. Given these specifics of the underlying data and the country sample, the average-linkage principle of cluster memberships applied to the sample.

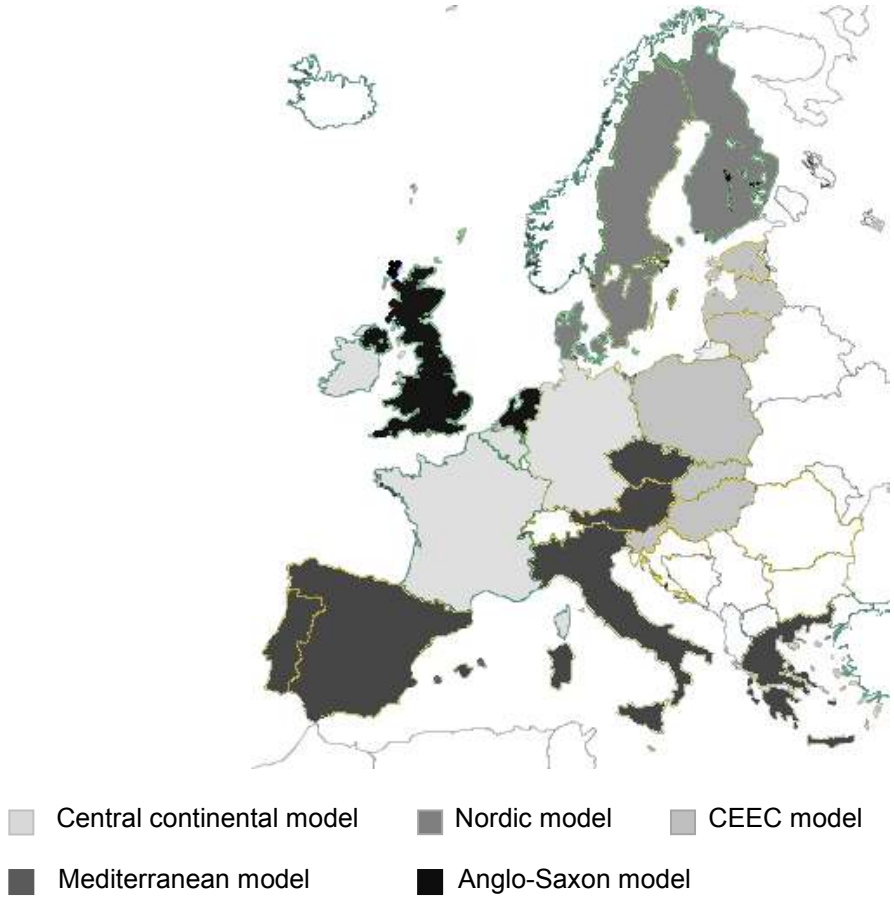
In every case, a hierarchical agglomerative classification method is used since it is not intended to impose a given, pre-determined classification of countries *ex ante*. This method starts with a single-country cluster and entails a step-wise concentration of countries according to their degree of structural similarities. Given that it is intended to attach all countries in the sample to a certain cluster, and that cases in which a certain country belongs to several clusters shall be ruled out, the selected clustering method yields an exhaustive as well as a disjunctive classification. A classification is exhaustive if $\bigcup_{K \in \mathrm{K}} K = N$, with N being the total amount of analysed objects. A disjunctive partition meets the condition that $K, L \in \mathrm{K}, K \neq L$, so that $K \cap L = \phi$.

VARIETIES OF THE EUROPEAN SERVICE ECONOMIES: THE AGGREGATED PICTURE

As a first approximation for identifying different service economies models the cluster analysis is carried out for 22 European countries on the basis of six macro-aggregated indicators: relative employment shares in private services, public services and mixed

services in 2005 and the growth rate of such employment shares during the decade 1995-2005. In this way, we consider a wider set of economies than previous studies and three theoretical situations of services provision (following Di Meglio et al. 2012).The results show a clustering around five service economies models across the European region (Figure 1). Therefore, the varieties of service economies emerge just on the basis of the interactions and patterns of aggregated sectoral composition of employment. The grouping is closely related to geographical or socio-economic proximities, which lead us to label the groups as Mediterranean (including Italy, Spain, Greece, Portugal and also Austria and the Czech Republic[8]), Continental (Belgium, France, Germany and Ireland), Anglo-Saxon (United Kingdom and the Netherlands[9]), Nordic (Denmark, Sweden and Finland), and the CEEC (Central and Eastern European Countries, including Estonia, Latvia, Hungary, Slovakia, Lithuania, Poland and Slovenia). The typology is robust to the use of other amalgamation rules and to another method of grouping, such as the K-means clustering (Table 1). This method confirms the previous results, except for Slovakia, that is grouped together with the Mediterranean model. This is not surprising considering the strong political, historical and economic links and the geographical proximity of Slovakia with the Czech Republic, which was initially grouped within this model.

This fivefold typology embraces a wider set of service models exclusively across the EU countries than those found by previous research. It is close to that found by Gadrey (2009) using a simplified criterion based on market and non-market services, although his taxonomy was not entirely applicable to EU25 countries (Daniels *et al.* 2011, p. 156)[10]. Moreover, the analysis confirms that the varieties of EU service economies increase when considering new member states, a conclusion already reached by Daniels *et al.* (2011).



Source: Based on EU KLEMS Database.

Figure 1. *EU service economies based on aggregated indicators*

That the grouping of EU services economies reproduces, to some extent, the varieties of institutional and social models should come as no surprise. The different conceptual approaches to European diversity previously outlined are most likely closely connected. As Hall and Soskice (2001, p. 50-51) note, it appears to be a correspondence between 'the types of political economies and the types of welfare state'. In fact, liberal market economies are generally accompanied by liberal social-policy regimes, which lend support to fluid labour markets mainly composed of an unspecific skilled labour force. At the same time, social policy regimes that accompany coordinated market economies are aligned to the corporate strategies found in such economies. Moreover, as Blanke and Hoffmann (2008) state, the central social issue, addressed by welfare state models, is associated to a certain extent on the predominant type of the underlying institutional model: poverty (UK), the worker question (Germany), population and family (France/Italy) and equality (Scandinavian countries). The service economies models identified are also aligned with the institutional organization of production, as well as

the social policy regimes. The Anglo-Saxon service economies combine the strongest private orientation and the weakest public orientation with a progressively increasing role of mixed services (Table 1). In this model, private provision plays an overwhelming role in services, in accordance with the market-driven capitalism and liberal social policy regime that characterize the countries belonging to this group. They concentrate greater economic and political power and provide little support to the family or gender equality (Gadrey 2007 and 2009). By contrast, in market-coordinated economies a different service orientation prevails. Nordic economies show a clear mixed services orientation and a comparatively lower participation of private services in employment. In this case, the provision of most services involves a combination of public and non-public actors and a higher level of public funds and regulation. Indeed, the predominance of mixed services employment is aligned with social democratic economies that feature the highest levels of social protection expenditures and universal welfare provision. On the contrary, public services are relatively more relevant in the Continental model in which conservative welfare state regimes appear to prevail. The Mediterranean cluster is closer to the Continental model as regards public services orientation although it shows the lowest average share of mixed services in employment. This sort of underdevelopment in the provision of mixed services may be explained by the different role played by public and private actors in this group. According to Ferrara (2000, p.170), the mix between public and private actors has evolved differently in Southern Europe, particularly in the provision of health and social services. Distinctiveness is shown by a peculiar collusive articulation of public and private, often with important advantages for the private counterpart.

As in Daniels *et al.* (2011), the CEEC appears as a separate group. It shows the lowest share of private services in total employment, despite of having the highest annual growth rate during the last decade. This model is the only one showing positive annual growth rates for public services. This is closely related to the central role that public administration played in the new member states owing to the increased requirements for administrative support to the accession process, and to institutional changes launched by market oriented reforms (Stare 2007).

Table 1. *Characteristics of the service economies models*

	Cluster 1 Mediterranean	**Cluster 2 CEEC**	**Cluster 3 Continental**	**Cluster 4 Anglo-Saxon**	**Cluster 5 Nordic**	**EU25**
Private services share	33,4	27,5	37,0	43,7	32,5	36,4

Private services AGR	1,7	1,9	1,1	0,8	1,2	1,3
Public services share	6,6	6,4	7,7	5,6	6,3	6,7
Public services AGR	-0,2	1,6	-0,7	-0,6	-1,4	-0,7
Mixed services share	20,5	24,1	26,9	28,3	34,3	24,9
Mixed services AGR	0,2	0,2	0,8	0,8	0,4	0,4
Cases	7	6	4	2	3	

Note: Figures in the table represent cluster means (in %). Share refers to the participation in total employment in the year 2005. AGR means annual growth rate during 1995–2005. Cluster 1 includes: Italy, Spain, Greece, Portugal, Austria, Czech Republic and Slovakia. Cluster 2 includes: Estonia, Latvia, Hungary, Lithuania, Poland and Slovenia. Cluster 3 includes: Belgium, France, Germany and Ireland. Cluster 4 includes: the Netherlands, and the United Kingdom. Cluster 5 includes: Denmark, Sweden and Finland.

Source: Based on EU KLEMS Database.

In general, the dominant trend across the models identified is towards an increased participation of private services in total employment. The other side of the coin is that public services shares in employment show a diminishing tendency in all clusters analysed, except for the CEEC group. However, the group of countries strongly orientated to private services (Anglo-Saxon and to a lesser extent, Continental) shows a growing presence of mixed services in employment.

This fivefold typology attempts to identify service-related similarities that to some extent are interconnected for analysing their diverse configuration across EU countries. It does not intend to neglect the intra-variation within groups nor the regional heterogeneity within each country. Apart from those similarities, a number of significant differences remain across and within the countries included in each group. To achieve a better understanding of the rationale behind the services-lead clustering a more detailed and comprehensive exercise is proposed in the next section, based on sectoral-specific indicators related to different dimensions of service economies.

VARIETIES OF EU SERVICE ECONOMIES: THE SECTORAL PERSPECTIVE

The major objective of this section is to develop a mapping of the service economies in Europe, accounting for sectoral specifics over time. In this way, we will be able to examine the role different dimensions play within the diversity of service economy models, as well as to study its dynamic pattern.

Empirical setting: Data and analytical method - To meet this target and thus to be able to take a holistic or system-level perspective, our analysis is grounded in a

comprehensive set of indicators, reflecting different dimensions of the service economies in Europe. We follow an approach introduced by Balzat and Pyka (2006) and developed for mapping national innovation systems in OECD economies. Our country sample is broken down into several dimensions or building blocks reflecting the main features that characterize services activities at national level. These are labelled *structural composition*, *knowledge base and innovative efforts*, *internationalisation* and *competition restrictions.* As argued by Rubalcaba (2007), the key dimensions of the new service economy in Europe are: growth and employment, productivity, innovation, internationalisation and globalisation, regulations and competition. We integrate the growth, employment and productivity issues under a single dimension (structural composition) and also group together regulation and competition (competition restrictions). Each of the four central dimensions will be briefly explained below.

The variables included in our analysis originate from the EUKLEMS Database, Eurostat, OECD and World Trade Organization.[11] In order to capture the pattern dynamics of the European service industries, two time steps have been considered: 1995 and 2005. Owing to data availability twelve European countries are included in the study.[12]

The configuration of the EU service economies is captured by the *structural composition* dimension which contains variables related to employment, gross value added and productivity growth for 33 service subcategories. When available, information related to firms is also included, although in this case the level of disaggregation of data reduces significantly.

The *knowledge base and innovative efforts* dimension contains several variables aimed at evaluating innovation potential and performance in service activities across nations. Several studies have demonstrated that services may be at least as innovative as other economic sectors (Howells & Tether 2004; Gallego & Rubalcaba 2008; Gallouj & Djellal 2010), although old myths have been persistently upheld, that tertiary activities have difficulties in incorporating innovations and technology. R&D expenditure is a classic indicator of the innovative potential of a country. In our analysis, we consider service investment in R&D on the macroeconomic level by taking into account expenditures, distribution across industries and intensity using value added.[13] However, the strength of a country's innovation system depends on many more aspects than just investment in R&D-related activities. Thus, further variables are included in this dimension for estimating the current and future outcomes of national innovation systems. To

approximate the present inventiveness of a service economy, ICT patent data and human resources in science and technology (S&T) in services are mainly utilized. The future inventiveness of a country is evaluated by indicators of the national education systems, by structural variables of the national workforce engaged in knowledge intensive services (KIS) and knowledge intensive business services (KIBS), as well as by data on the share of training enterprises across industries.

The *internationalization* dimension measures the degree of openness of services activities in the twelve economies under scrutiny. In this study we have considered information on market share of available services categories in total trade and market share of services exports in world exports.[14] In a certain way, they reflect the expansion of global sourcing which has established a new pace in the international provision of services (van Welsum & Vickery 2005).

Competition is a key element for enhancing competitiveness by means of increases in economic global productivity (Nicoletti & Scarpetta 2003), innovation and technological diffusion (Aghion *et al.* 2001). In order to capture the scope to which political and institutional framework promote or inhibit competition in services, a last dimension labelled *competition restrictions* is included in our analysis. The available OECD indicators of product market regulation are used for measuring this dimension.

With these four dimensions, the study aims to capture the configuration of services economies in a structured way, as well as central determinants of service activities on the national level. In Figure 2, a diagram of the dimensions considered is shown.

The specific targets of our study are to detect and then to analyse cross-national (dis-) similarities in the structure and performance of the different dimensions of services economies on the country level. Therefore, our research focus prevents us from performing a fine-grained level analysis of the regional formations of service economies. The clustering method is applied from an *overall* and *partial* perspective. In the first case, the entire set of indicators previously described is subject to a hierarchical cluster analysis. In the second one, the above described clustering procedure is applied to every single dimension.

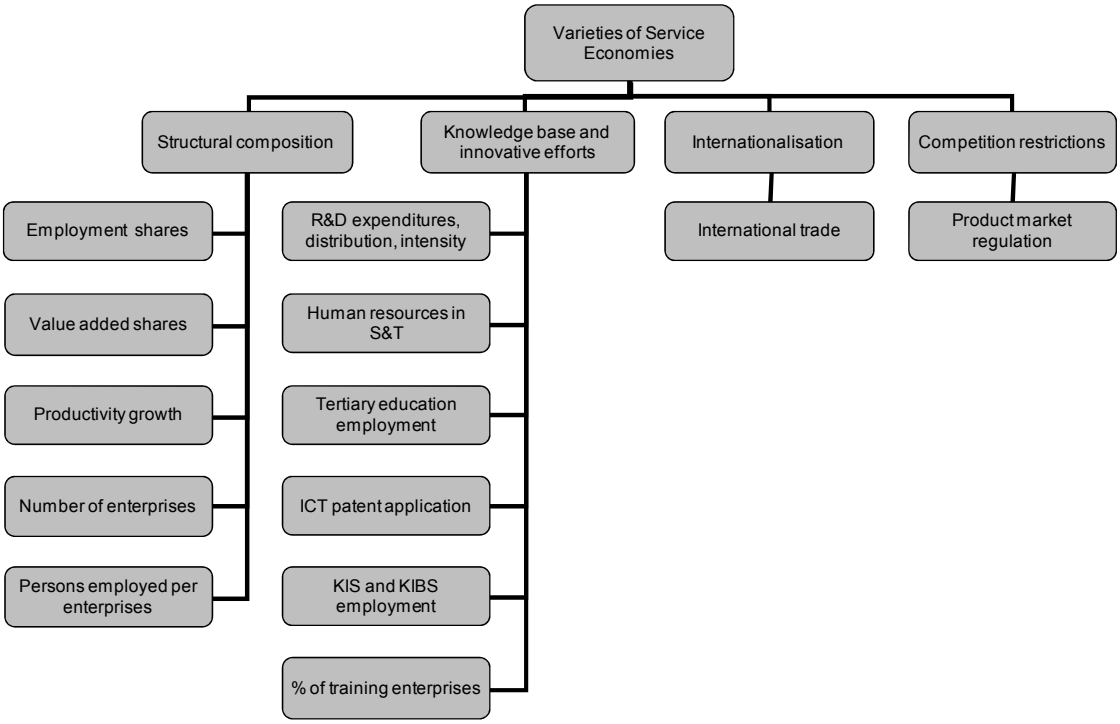


Figure 2. *The sectoral specific dimensions considered in the analysis*

Empirical findings - First, we perform a cluster analysis with all the available indicators in order to detect a general pattern of varying service patterns in the economies under investigation. As Table 2 shows, this overall pattern for the first year, 1995, displays three different groups which are to be distinguished from each other. The first group comprises the Eastern European countries included in the analysis: the Czech Republic and Poland. On the one hand, the service structures of these economies are too different from the ones of the old membership countries, but, on the other hand, they are similar enough to be grouped in a distinguishable cluster. In these economies, several factors such as market-oriented reforms, institutional, technological and organizational changes, as well as statistical realignment of activities may explain the pattern followed by services activities in the last decade (Stare 2007; Daniels *et al.* 2011). As this result is maintained for the year 2005, the differences to the other countries have to be considered as rather persistent. A similar result is detected for the Irish service economy. Over the period observed, the cluster algorithm allocates Ireland into a single cluster, stressing the different character of this service economy, which very likely can be traced back to the special role that outsourcing, ICT and the financial sector play there. In 1995, all other economies in our sample are allocated into one large cluster which means that, at that time, the differences within this group of countries are not pronounced enough to justify a more complex pattern in this overall

analysis. This large cluster, however, is broken open for the year 2005 showing a process of convergence of some economies. The two Mediterranean countries, Italy and Spain, constitute their own cluster and also a Scandinavian Cluster, encompassing Denmark, Finland, the Netherlands and Sweden, emerges. These two clusters, therefore, show a strong geographical determination, indicating a particular organization of their service economies. The remaining service economies of France, Germany and the United Kingdom, partly follow a geographical pattern (continental European economies) and a size-dependent pattern, as with Germany, France and United Kingdom the larger European economies in terms of GDP, can be found here.

Table 2. *Composition of country clusters by dimensions*

Dimensions and Countries												
Overall												
	CZ	**DK**	**ES**	**FI**	**FR**	**DE**	**IRE**	**IT**	**NL**	**PL**	**SW**	**UK**
1995	1	2	2	2	2	2	3	2	2	1	2	2
2005	1	2	3	2	4	4	5	3	2	1	2	4
Structural composition												
1995	1	2	2	2	2	2	3	2	2	1	2	2
2005	1	2	3	2	4	4	5	3	4	1	2	4
Knowledge base and innovative efforts												
1995	1	2	1	3	3	4	1	1	3	1	3	5
2005	1	1	2	3	3	4	1	5	3	2	3	3
Internationalisation												
1995	1	2	3	1	4	4	1	3	5	6	1	4
2005	1	2	4	3	4	4	5	4	3	1	3	6
Competition restrictions												
2000	1	2	3	2	4	2	4	3	2	1	2	5
2005	1	2	1	2	3	4	5	1	4	1	4	6

The fact that country size, in principle, seems to matter in the overall configuration of the EU services economies patterns is a surprising result, which impels us to investigate the cluster patterns observed for each of the four specific dimensions we identified as important. This will allow us a better understanding of the variety of service models in Europe as well as the identification of dimensions which, more than others shape the overall picture.

The patterns detected for the varying structural compositions of our sample economies are strikingly similar to the overall pattern. From this follows that homogeneity within each cluster, and heterogeneity amongst the different clusters with respect to the

structural composition, are dominant and follow the geographical pattern in 2005. The Eastern European model differs from the Continental European model, which again differs from the Scandinavian and Mediterranean models. In contrast to the overall picture, the size effect is not visible in the dimension of structural composition. The Dutch service economy remains in the cluster together with the largest countries in our sample: France, Germany and the United Kingdom. Therefore, it can be concluded that the country size effect, which seems to matter when considering the comprehensive set of indicators that shape the overall service economy pattern, is not relevant from the perspective of specific dimensions, such as the structural composition. The Eastern European model is below the rest in terms of services participation in the economy and productivity. In Mediterranean countries and Ireland, services account for quite similar shares of employment and value added (below 70%), although productivity appears to be somewhat higher in the Irish economy. Moreover, Ireland is mainly oriented towards financial intermediation, and the Mediterranean countries to public administration and hotels and restaurant. On the other hand, the Scandinavian and Continental models show the highest participation of services in employment and value added (surpassing 70%), as well as the top levels of productivity. While in the Nordic economies sectors such as health and education are the leading ones, in the Continental countries, business activities (in particular, professional and other business services) emerge as the most important.

The patterns detected for the dimension knowledge base and innovative efforts in services, however, differ strongly from the overall pattern. From this follows that the remaining heterogeneity within the clusters found so far is caused by differences in the knowledge bases. Furthermore, these differences are strong enough to justify entirely different cluster allocations within the overall pattern. Concerning the knowledge base dimension we find in 1995, three single country clusters (Denmark, Germany and UK), one cluster comprising four old member countries (Finland, France, the Netherlands and Sweden), and one cluster with the new members from Eastern Europe (Czech Republic and Poland), the Mediterranean economies (Spain and Italy) and Ireland. This picture changes in the year 2005, and, again, we found a strong deviation from the allocations found within the overall pattern. Therefore, this allows the conclusion to state a significant dynamic within the knowledge dimension. Now, Germany and Italy constitute single country cluster solutions. In Germany this dimension is oriented towards manufacturing activities while in Italy s mainly oriented towards knowledge-intensive market services (excluding financial services and high-tech services). The Spanish service economy goes together with Poland into one cluster in which

knowledge base in services is relatively weak and mostly oriented to less knowledge-intensive activities (distributive trades, hotels and restaurants). Another cluster showing a high innovative potential in knowledge-intensive financial services is composed by the Czech Republic, Denmark and Ireland. Finally, Finland, France, the Netherlands, Sweden and the United Kingdom form together the largest cluster, characterized by a relatively strong knowledge and innovation base in services, in particular, in knowledge-intensive high-technology activities.

The dimension internationalisation again is characterized by a higher stability over the period between 1995 and 2005. The particular patterns which are detected, however, also differ, at least partly, from the overall pattern, which allows for the conclusion that internationalisation of service economies is not completely determined by the structural compositions of the service industries. Over this ten-year period, the Danish service economy forms a single country cluster solution. The Czech Republic, Finland, Ireland and Sweden constituted one cluster over 1995. However, this group splits up in 2005, following to some extent a geographical pattern. Eastern European countries, in which the internationalization of 'other commercial services' shows a decreasing trend, differ from Nordic economies, including the Netherlands, in which these activities show a growing pattern. Ireland constituted a distinctive group in subsequent years, as in the overall picture. This may be explained by the impressive growth in services trade in 2000 and 2005, mainly in the category comprising financial activities and business services. Continental countries and Mediterranean economies formed separate clusters in 1995 but joined together into one group in 2005. The similarities in the pattern of services internationalization may be found in the central and growing role played by travel and 'other commercial services'. The United Kingdom, previously grouped together with France and Germany, is allocated in a single cluster solution for the year 2005. This is likely caused by the strongest base of British service economy in world exports, mainly in 'other commercial services'.

For the competition restrictions, dimension data is only available for the analysis of the shorter period 2000-2005. The patterns detected here are rather irregular. Therefore, this dimension is not entirely repeated in the overall picture, indicating a moderate influence only. It is noticeable that the Mediterranean cluster is repeated in 2000, and enlarged by the two Eastern European service economies in our sample in 2005. In this group, strong competition restrictions are found, especially in the area of professional services. In 2005, the cluster originally built by France and Ireland is split up into separate single groups. The French economy strongly restricts competition in

retail distribution, road and telecom, while Ireland does so mainly in airlines and railways. The Anglo-Saxon tradition for the United Kingdom leads to a single country cluster in both years, which is characterized by comparatively lower levels of competition restrictions, except for postal services. The cluster initially formed by Denmark, Finland, Germany, The Netherlands and Sweden is broken up in 2005, and the last three economies constitute a separate group. Both clusters show relatively low levels of market regulation.

From the overall sectoral perspective, the configuration of European service economies models seems to follow a socio-economic and geographical pattern. Despite country size seems to matter for shaping the configuration of clusters from the overall perspective, it is not found in the partial analysis of the different dimensions included in the analysis. Among the different dimensions of the service economies, the structural composition is the most prominent one in shaping the varieties of EU sectoral models. Strong dissimilarities, across time between the models identified, arise when considering the knowledge base and innovative efforts dimension. Meanwhile, the patterns detected in terms of services internationalization and competition restrictions are rather irregular. Country allocations arising from these dimensions are only partially deviated from the overall picture. Therefore, they appear to have only a modest influence in the overall pattern.

CONCLUSIONS

The paper shapes the services economies in Europe using a Neo-Schumpeterian and evolutionary approach. Therefore, it adopts an empirical perspective in which different levels of analysis (aggregated and sectoral) complement each other. In this way, it attempts to make a contribution to the 'how many Europes' debate by considering the role played by service activities in national economic structures. Our research argues that there are quite many service models across the enlarged EU, more than was stated in previous research. From an aggregated perspective that classifies services provision into private, public and mixed categories, a fivefold typology of service economy models is found. Anglo-Saxon, Nordic, Central Continental, Mediterranean and Central Eastern European models are identified. The main orientation of the varieties of service economies is closely connected to the diversity of social models, as well as to differences in the institutional organization of production. One should guard, however, from considering the whole set of countries belonging to a certain category or even each country as undifferentiated.

The service economies models identified from a disaggregated perspective do not entirely replicate the macro typology but reveal some clear similarities as regards the structural composition dimension. Differences can be mainly attributed to the availability of underlying data which ultimately affects the country sample. The structural composition of countries emerges as the dimension which mainly shapes the varieties of EU services models, while knowledge base and innovative efforts in services show a relatively more dynamic and uneven pattern across the clusters identified. As in Daniels *et al.* (2011), knowledge and innovation (that are at the heart of the development of knowledge-intensive services, KIS) explain the heterogeneous behavior of services models.

From a broad perspective, the results from this study are relevant to the design of policy measures directed towards services or service innovation at European level which have to become more fine-grained and consider the pronounced differences which exist between the different models. However, a complete analysis of policy implications lies outside the scope of this research.

This paper has emphasized the diverse behaviour of services across countries, but further research is needed to simultaneously explore the spatial, sectoral and dynamic configuration of services across Europe. This is a most prominent avenue of future research. Another challenging line of future research relates to the extension of the time span under study in order to examine how the consolidation of services market integration and recent crisis influence the configuration of service economies across the enlarged EU.

ACKNOWLEDGEMENT

The authors gratefully acknowledge funding through the ServPPIN project: *The Contribution of Public and Private Services to European Growth and Welfare, and the Role of Public-Private Innovation Networks*, Socio-Economic Sciences and Humanities Programme of the EU 7th Framework Programme.

Notes

[1] The official statistics on services in Europe are based on the NACE classification. According to Eurostat (NACE Rev. 1.1) the service sector consists of those economic activities covered by Sections G to Q.

[2] There are serious data limitations for spatially/regionally examine services activities at disaggregated level, particularly for some dimensions included in our study such as competition restrictions.

[3] The *Nordic* includes Denmark, the Netherlands, Finland and Sweden; the *Anglo-Saxon* contains Ireland and the United Kingdom; the *Continental* comprises Austria, Belgium, France, Germany, Luxembourg, and *Mediterranean* includes Italy, Greece, Spain, and Portugal.

[4] The Anglo-Saxon model includes the United Kingdom, the US, Canada and Australia; the Nordic model comprises Sweden, Norway, Denmark and Finland. Portugal, Spain, Italy, Greece and Ireland are excluded from this analysis.

[5] European Continental includes France, Germany, Belgium and the Netherlands, while familialist includes Italy, Portugal, Spain, Greece and Japan. Belgium and the Netherlands can be grouped together with the Nordic depending on the criteria used.

[6] Private services are approximated with data for distributive trades, hotels and restaurants, water transport, air transport, financial services, real estate, renting and business activities employment. Public services are estimated with data for public administration, defence and compulsory social security employment. Mixed services are approximated with data for employment in the following service sectors: education, health and social work, other community, social and personal services, post and telecommunications, inland transport.

[7] Those countries with available information in EUKLEMS Database are included in the analysis: EU25 except for Luxembourg, Malta and Cyprus (which were removed from the analysis to avoid outliers' behavior). No data is available in EUKLEMS Database for Bulgaria and Romania.

[8] The inclusion of the Czech Republic within the Mediterranean cluster may be explained on historical basis, due to its link with the former Austro-Hungarian Empire.

[9] Both countries have a relatively high share of private services in employment. Other authors also found both countries in the Anglo-Saxon cluster due to their similarities in industrial relations (Amable, 2003).

[10] We have also performed the cluster analysis including the United States, Australia, Japan and Korea, countries with available information in EUKLEMS Database. Results show that the former two countries are grouped together with the Anglo-Saxon model, while the latter two build a differentiated cluster. This result, however, is opposed to Gadrey's (2009) findings which positioned the Japanese economy next to Mediterranean countries.

[11] Detailed data description (sources and sectoral breakdown availability) is available from the corresponding author upon request.

[12] Czech Republic (CZ), Denmark (DK), Spain (ES), Finland (FI), France (FR), Germany (DE), Ireland (IRE), Italy (IT), The Netherlands (NL), Poland (PL), Sweden (SW) and the United Kingdom (UK).

[13] We do not consider data from the survey on service innovation (CIS) in order to avoid comparability problems. Like the Innovation Scoreboard, it provides limited information for some countries.

[14] Available services categories are: transportation services, travel and other commercial services, including communication, construction, insurance services, financial services, royalties and licence fees, other business services and personal, cultural and recreational services. Foreign direct investment in services has not been included owing to data constraints.

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